IN THE CLAIMS:

CLEAN VERSION OF THE AMENDED CLAIMS

1.   (twice amended)   A method for contactless measurement of a wall thickness of a transparent object by employing of light sources, lenses, deflection mirrors or deflection prisms, semi permeable mirrors as well as line sensors and a controller, characterized in that light from a first illuminating surface (11) is initially collimated and in the following focused onto a surface of the transparent object (1) with an angle of incidence relative to a normal of the surface, wherein two reflexes of light occurring at a front side (1.1) and at an inner side (1.2), are imaged furthermore onto a first opto-electronic image resolving sensor (26) and wherein light from a second illuminating surface (21) is also simultaneously collimated initially and in the following focused in the direction toward the surface of the transparent object (1), wherein the direction toward the surface of the transparent object (1) corresponds to an exit direction of the light from the first illuminating surface (11), and wherein furthermore reflexes of light are imaged onto the second opto-electronic image resolving sensor (16) and wherein the average value of distances between respective two reflexes on each of the two opto-electronic image resolving sensors is evaluated as a measure of the wall thickness in a following disposed controller (3).

2.   (twice amended)   Device for contactless measurement of wall thickness of a transparent object employing light sources, lenses, semi permeable mirrors or semi permeable prisms as well as image resolving sensors and a controller, characterized in that a lens (12) is disposed following to a first illuminating surface (11), wherein semi

permeable mirror (13) is disposed behind the lens (12) in such a way that light is reflected into an objective (14) and is further focused onto the transparent object (1) and wherein furthermore an objective (24) is disposed such that the objective (24) together with a lens (25) images beams reflected at the transparent object (1) onto a sensor (26) through a semi permeable mirror (23) and wherein a lens (22) is simultaneously coordinated to a second illuminating surface (21), wherein the semi permeable mirror (23) is disposed following to the lens (22) in such a way that light from the second illuminating surface (21) is focused also onto the transparent object (1), wherein the direction of incidence of light corresponds to an exit direction of light from the first illuminating face and wherein reflexes are imaged onto a sensor (16) through the objective (14), wherein a controller (3) is connected to the two sensors (16) and (26).

9. (new)   A method for contactless measurement of a wall thickness of a transparent object by employing of light sources, lenses, deflection mirrors or deflection prisms, semi permeable mirrors as well as line sensors and a controller, characterized in that light from a first illuminating surface (11) is initially collimated and in the following focused onto a surface of the transparent object (1) with an angle of incidence relative to a normal of the surface, wherein two reflexes of light, which occur at a front side (1 .1) and at an inner side (1.2), are imaged onto a first opto-electronic image resolving sensor (26) and wherein light from a second illuminating surface (21) is also simultaneously collimated initially and in the following focused in the direction toward the surface of the transparent object (1), wherein the direction toward the surface of the transparent object (1) corresponds to the emergent direction of light from the first illuminating surface (11), and wherein reflexes of the light which has been sent out from the second illuminating

surface (21) are imaged onto the second opto-electronic image resolving sensor (16) and wherein the average value of the two distances of the respective reflections which has been imaged on each of the two opto-electronic image resolving sensors is evaluated as a measure of the wall thickness in a disposed controller.

10.   (new)   Device for contactless measurement of wall thickness of a transparent object employing light sources, lenses, semi permeable mirrors or semi permeable prisms as well as image resolving sensors and a controller, characterized in that a lens (12) is disposed following to a first illuminating surface (11), wherein a semi permeable mirror (13) is disposed behind the lens (12) in such a way that light is reflected into an objective (14) and is further focused onto the transparent object (1) and wherein furthermore an objective (24) is disposed such that the objective (24) together with a lens (25) images beams reflected at the transparent object (1) onto a sensor (26) through a semi permeable mirror (23) and wherein a lens (22) is simultaneously coordinated to a second illuminating surface (21), wherein the semi permeable mirror (23) is disposed following to the lens (22) in such a way that light from the second illuminating surface (21) is focused also onto the transparent object (1), wherein the direction of incidence of light corresponds to the emergent direction of light from the first illuminating surface and wherein reflexes are imaged onto a sensor (16) through the objective (14), wherein a controller (3) is connected to the two sensors (16) and (26).

11.   (new)   A device for contactless measurement of a wall thickness of a container glass being a transparent object (1) with a front side (1.1) and a rear side (1.2) comprising a first illuminating surface (11) for generating first diverging light beams;

a first lens (12) disposed in the area of the first diverging light beams and for generating first parallel light beams from the diverging light beams generated by the first illuminating surface (11);

a first semi-permeable mirror (13) disposed in a path of the first parallel light beams for reflecting the first parallel light beams;

a first objective (14) disposed in a path of reflected first parallel light beams for focusing the reflected first parallel light beams in the area of the front side (1.1) and rear side (1.2) of the transparent object (1);

a second objective (24) disposed in a path of first light beams reflected in the area of the front side (1.1) and rear side (1.2) of the transparent object (1) for focusing the first light beams into third parallel light beams;

a second semi-permeable mirror (23) disposed in a path of the third parallel light beams for passing the third parallel light beams;

a second sensor (26);

a fourth lens (25) disposed in the path of the third parallel light beams for focusing the third parallel light beams onto the second sensor (26);

a second illuminating surface (21) for generating second diverging light beams;

a second lens (22) disposed in the area of the second diverging light beams and for generating second parallel light beams from the second diverging light beams generated by the second illuminating surface (21);

wherein the second semi-permeable mirror (23) is disposed in a path of the second parallel light beams for reflecting the second parallel light beams;

wherein the second objective (24) is disposed in the path of the reflected second parallel light beams for focusing the reflected second parallel light beams in the area of the front side (1.1) and rear side (1.2) of the transparent object (1);

wherein the first objective (14) is disposed in a path of second light beams reflected in the area of the front side (1.1) and rear side (1.2) of the transparent object (1) for focusing the second light beams into fourth parallel light beams;

wherein the first semi-permeable mirror (13) disposed in a path of the fourth parallel light beams for passing the fourth parallel light beams;

a first sensor (16);

a third lens (15) disposed in the path of the fourth parallel light beams for focusing the fourth parallel light beams onto the first sensor (16);

a controller (3) connected to the first sensor (16) and connected to the second sensor (26) for averaging values determined by the first sensor (16) and determined by the second sensor (26).

12.   (new)   The device according to claim 11 wherein the first illuminating surface (11) is a diffusely illuminating surface and wherein the second illuminating surface (21) is a diffusely illuminating surface.

13.   (new)   The device according to claim 11 wherein the reflected first parallel light beams focused in the area of the front side (1.1) and rear side (1.2) of the transparent object (1) are impinging onto the object (1) from different angles of incidence; and

wherein the reflected second parallel light beams focused in the area of the front side (1.1) and rear side (1.2) of the transparent object (1) are impinging onto the object (1) from different angles of incidence.

14. (new) The device according to claim 11 wherein

parts of the first light beams reflected in the area of the front side (1.1) and rear side (1.2) of the transparent object (1) are entering the second objective (24) despite a grained, uneven surface of the object and even though other parts of the first light beams are not available based on surface defects of the object (1); and

wherein parts of the second light beams reflected in the area of the front side (1.1) and rear side (1.2) of the transparent object (1) are entering the first objective (24) despite a grained, uneven surface of the object and even though other parts of the second light beams are not available based on surface defects of the object (1).

15. (new) The device according to claim 11 wherein

a second optical system is identically constructed as is a first optical system and operates with a reversed beam direction for compensating errors based on wedge shape and tipping.

16. (new) The device according to claim 11 wherein the first diverging light beams have a first origin at different points of the first illuminating surface; and

wherein the second diverging light beams have a second origin at different points of the second illuminating surface

17. (new)   The device according to claim 11 wherein the first divergent light beams comprise incoherent light; and

wherein the second divergent light beams comprise incoherent light.

18. (new)   The device according to claim 11 wherein the first divergent beams do not comprise laser light and wherein the second diverging beams do not comprise laser light.

19. (new)   A method of contactless measurement of a wall thickness of container glass being a transparent object (1) with a front side (1.1) and a rear side (1.2) comprising the steps of:

generating first diverging light beams on a first illuminating surface (11);

generating first parallel light beams from the diverging light beams generated by the first illuminating surface (11) with a first lens (12) disposed in the area of the first diverging light beams;

reflecting the first parallel light beams with a first semi-permeable mirror (13) disposed in a path of the first parallel light beams;

focusing reflected first parallel light beams in the area of the front side (1.1) and rear side (1.2) of the transparent object (1) with a first objective (14) disposed in a path of the reflected first parallel light beams;

focusing the first light beams into third parallel light beams with a second objective (24) disposed in a path of first light beams reflected in the area of the front side (1.1) and rear side (1.2) of the transparent object (1);

passing the third parallel light beams through a second semi-permeable mirror (23) disposed in a path of the third parallel light beams;

focusing the third parallel light beams onto a second sensor (26) with a fourth lens (25) disposed in the path of the third parallel light beams;

generating second diverging light beams with a second illuminating surface (21);

generating second parallel light beams from the second diverging light beams generated by the second illuminating surface (21) with a second lens (22) disposed in the area of the second diverging light beams;

reflecting the second parallel light beams with the second semi-permeable mirror (23) disposed in a path of the second parallel light beams;

focusing the reflected second parallel light beams in the area of the front side (1.1) and rear side (1.2) of the transparent object (1) with the second objective (24) disposed in the path of the reflected second parallel light beams;

focusing second light beams reflected in the area of the front side (1.1) and rear side (1.2) of the transparent object (1) into fourth parallel light beams with the first objective (14) disposed in a path of second light beams ;

passing the fourth parallel light beams through the first semi-permeable mirror (13) disposed in a path of the fourth parallel light beams;

focusing the fourth parallel light beams onto a first sensor (16) with a third lens (15) disposed in the path of the fourth parallel light beams;

averaging values determined by the first sensor (16) and determined by the second sensor (26) in a controller (3) connected to the first sensor (16) and connected to the second sensor (26).

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20. (new) The method according to claim 19 further comprising

imaging a first reflex derived from the front side (1.1) of the object (1) onto the second sensor (26);

imaging a third reflex derived from the rear side (1.2) of the object (1) onto the second sensor (26);

determining a first distance of the first reflex and of the third reflex on the second sensor (26);

imaging a second reflex derived from the front side (1.1) of the object (1) onto the first sensor (16);

imaging a fourth reflex derived from the rear side (1.2) of the object (1) onto the first sensor (16);

determining a second distance of the second reflex and of the fourth reflex on the first sensor (16);

averaging a size of the first distance and a size of the second distance.